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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,959	04/05/2004	Kunihiko Nagase	042324	2428

38834 7590 02/13/2007
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EXAMINER

ZARNEKE, DAVID A

ART UNIT	PAPER NUMBER
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2891

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/816,959

Applicant(s)

NAGASE ET AL.

Examiner

David A. Zarneke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 2,4,6 and 8-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/11/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1, 3, 5, and 7, in the reply filed on 11/9/06 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsai et al., US Patent 7,067,235.

Tsai (figures 1A-1C) teaches a method for fabricating a semiconductor device comprising the steps of:

forming an organic resist film [20];

forming over the organic resist film a mask film [22] having etching characteristics different from those of the organic resist film and having a first opening [23] formed in a first region; and

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etching the organic resist film with the mask film as a mask (figure 1C), in the step of etching the organic resist film, the organic resist film being etched with a mixed gas of nitrogen gas and oxygen gas (claim 1, 8, 60+).

Regarding claim 3, Tsai teaches a flow rate ratio of the oxygen gas to a total flow rate of the mixed gas is less than 10% (7, 2+).

With respect to claim 5, Tsai teaches a flow rate ratio of the oxygen gas to a total flow rate of the mixed gas is 1-3% (7, 2+).

As to claim 7, Tsai teaches a pressure inside a chamber for etching the organic resist film is 25-50 mTorr (7, 2+).

Claims 1, 3, 5, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al., US Patent 6,933,236.

Lee (figures 1-2) teaches a method for fabricating a semiconductor device comprising the steps of:

- forming an organic resist film [15];

- forming over the organic resist film a mask film [16] having etching characteristics different from those of the organic resist film and having a first opening (figure 1) formed in a first region; and

- etching the organic resist film with the mask film as a mask (figure 2), in the step of etching the organic resist film, the organic resist film being etched with a mixed gas of nitrogen gas and oxygen gas (3, 63+).

Regarding claim 3, Tsai teaches a flow rate ratio of the oxygen gas to a total flow rate of the mixed gas is less than 10% (3, 67+).

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With respect to claim 5, Tsai teaches a flow rate ratio of the oxygen gas to a total flow rate of the mixed gas is 1-3% (3, 67+).

As to claim 7, Tsai teaches a pressure inside a chamber for etching the organic resist film is 25-50 mTorr (3, 67+).

Conclusion

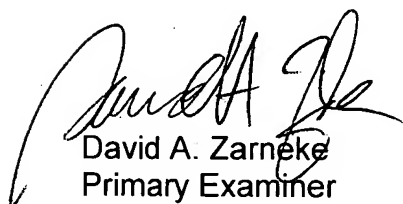
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited but not relied upon teaches the state of the art. Especially the use of an N₂/O₂ etch chemistry to strip, or ash, an organic photoresist.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David A. Zarneke
Primary Examiner
February 3, 2007